· population 34

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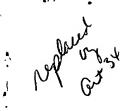
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PATENT CLAIMS (amended according to Art. 19 on 01.24.2004)

- 1. A power semiconductor module comprising
- 5 at least one semiconductor chip (11) made of a semiconductor material and having a first and a second main electrode.
 - a first and second main connection (91, 92),
- a contact lamina (2) in electrical contact with 10 the first main electrode and the first main connection (92),
 - the contact lamina (2) containing an alloying partner and it being possible for a eutectic to be formed between the alloying partner and the semiconductor material,
 - the contact lamina being coated with an electrically conductive protective layer (31, 32),
 - an external contact area of the protective layer (31, 32) substantially comprising a noble metal, an electrically conductive nitride or a graphite,

characterized in that

- the protective layer (31, 32) has at least one electrically conductive base layer (31) applied on the contact lamina (2), and
- 25 an electrically conductive surface layer (32), which forms the external contact area.
 - 2. The power semiconductor module as claimed in claim 1, characterized in that
- 30 the base layer (31) substantially comprises Ni and preferably has a thickness of between approximately 1 μm and 15 μm , preferably between 2 μm and 8 μm .
- 35 3. The power semiconductor module as claimed in claim 1 or 2, characterized in that
 - the surface layer (32) has a thickness of between approximately 0.1 μm and 5 μm .



- 4. The power semiconductor module as claimed in one of claims 1 to 3, characterized in that
- the surface layer (32) substantially comprises Ru,
- 5 an electrically conductive intermediate layer is provided between the surface layer (32) and the base layer (31), said intermediate layer substantially comprising Au and preferably having a thickness of approximately 0.2 μm, and
- 10 the base layer (31) preferably has a thickness of between 5 μm and 12 $\mu m\,.$
 - 5. The power semiconductor module as claimed in one of the preceding claims, characterized in that
- 15 the semiconductor chip (11) internally has an IGBT structure or a diode structure.

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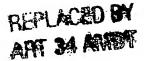
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PATENT CLAIMS

- 1. A power semiconductor module comprising
- at least one semiconductor chip (11) made of a semiconductor material and having a first and a second main electrode,

- 10 -

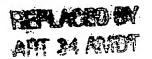
- a first and second main connection (91, 92),
- a contact lamina (2) in electrical contact with the first main electrode and the first main connection (92),
- the contact lamina (2) containing an alloying partner and it being possible for a eutectic to be formed between the alloying partner and the semiconductor material,
- 15 characterized in that
 - the contact lamina is coated with an electrically conductive protective layer (31, 32).
- 2. The power semiconductor module as claimed in 20 claim 1, characterized in that
 - the contact lamina (2) substantially comprises Ag or Al.
- 3. The power semiconductor module as claimed in either of claims 1 and 2, characterized in that
 - an external contact area of the protective layer (31, 32) substantially comprises a noble metal, preferably Ag, Au, Pd, Rh or Ru.
- 30 4. The power semiconductor module as claimed in either of claims 1 and 2, characterized in that
 - an external contact area of the protective layer (31, 32) substantially comprises an electrically conductive nitride, preferably TiN, CrN or ZrN.
 - 5. The power semiconductor module as claimed in either of claims 1 and 2, characterized in that
 - an external contact area of the protective layer



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- (31, 32) substantially comprises a graphite.
- 6. The power semiconductor module as claimed in one of claims 3 to 5, characterized in that
- 5 the contact lamina (2) substantially comprises Al or Mg,
 - the protective layer (31, 32) has at least one electrically conductive base layer (31) applied on the contact lamina (2), and
- 10 an electrically conductive surface layer (32), which forms the external contact area.
 - 7. The power semiconductor module as claimed in claim 6, characterized in that
- the base layer (31) substantially comprises Ni and preferably has a fourth thickness of between approximately 1 μm and 15 μm , preferably between 2 μm and 8 μm .
- 20 8. The power semiconductor module as claimed in claim 6 or 7, characterized in that
 - the surface layer (32) has a third thickness of between approximately 0.1 μm and 5 μm .
- 9. The power semiconductor module as claimed in one of claims 6 to 8, characterized in that
 - the surface layer (32) substantially comprises Ru,
 - an electrically conductive intermediate layer is provided between the surface layer (32) and the
- base layer (31), said intermediate layer substantially comprising Au and preferably having a fifth thickness of approximately 0.2 μm, and
 - the base layer (31) preferably has a fourth thickness of between 5 μm and 12 $\mu m\,.$
 - 10. The power semiconductor module as claimed in one of the preceding claims, characterized in that
 - the semiconductor chip (11) internally has an IGBT



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structure or a diode structure.

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